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ABSTRACT

This report discusses the alternative program structure developed independently at the University of Georgia, by dealing with a particular phase of the National Center for Higher Education Management Systems (NCHEMS) work, i.e., their Program Classification Structure (PCS). Three primary programs presented by NCHEMS are considered as primary functions and three alternative programs are categorized so as to link the outputs of higher education. The alternative program categories are "Direct Student Related Programs"; "Environmentally Related Programs"; and "Inwardly Directed Programs". (MJM)

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ED 076132

THE CONCEPT OF A PROGRAM STRUCTURE
AN ALTERNATIVE TO NCHEMS PCS

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A paper prepared for the 1972 Annual Forum of
The Association for Institutional Research

by
A. A. Sterns, Director

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Office of Program Planning and Analysis

University of Georgia

Athens, Georgia

May 4, 1972

The Office of Program Planning and Analysis
A Ford Foundation Supported Project at the University of Georgia

THE CONCEPT OF A PROGRAM STRUCTURE
AN ALTERNATIVE TO NCHEMS PCS

One need only leaf through the recent literature concerned with Higher Education to note that few of the outputs reveal significant creativity or make significant contributions to the solution of the serious problems confronting Higher Education. There is, however, a bright star on the horizon known under the acronyms of NCHEMS at WICHE. The contributions which have been made by that group can only be expressed in superlatives. For decades to come Higher Education will refer with esteem to the work of NCHEMS.

It is my pleasure to deal with a particular phase of NCHEMS work, i.e., their Program Classification Structure (PCS). Such a huge undertaking as the PCS could only have been attempted through an evolutionary process. Rather than presenting a finished product, the wise men at WICHE have explored every phase involved and have followed such exploration with preliminary papers presented for review and critique on a national level. The preliminary review edition of a Program Classification Structure published in June, 1970, was no exception to the rule. Ben Lawrence, Director of NCHEMS, stated that the preliminary edition was "... published and distributed in order to solicit comments and criticism from the entire higher education community."

I am responding to the NCHEMS PCS by discussing the program structure which was developed independently at the University of Georgia under a Ford Foundation Grant. Incidently, the Ford Foundation is also a funding source for some of the NCHEMS efforts. The University of Georgia Program Structure is not at odds with NCHEMS and we are convinced that our structure and the evolution of many others ideas still being developed at WICHE will meld together as they must!

To avoid semantic differences it is important to define a few expressions used in connection with a Program Structure.

We are tempted to consider the three "primary programs" presented by NCHEMS as primary "functions" rather than "programs". We find that the NCHEMS group itself might not have disagreed with our notion as they have stated when explaining the sample crosswalk,"... the function is ... instruction, central administration, student services etc. ..."

Function, Program, and Activity are words which deserve to be dealt with.Are the areas dealing with instruction, research or service, functions or are they programs or activities, or are they all three?

We can discern without difficulties four functions a University serves. The schematic on the following page represents our interpretation. We interpret functions as the natural endowments of an organization. By itself a function has no direction. Within the University those four functions, three of which are recognized in the NCHEMS PCS (instruction, research, and service) have evolved to be complex, intermingled and interdependent. The exponent and center point within the University, the Professor, is by his actions a conserver of culture, a generator of knowledge, a disseminator or instructor, and through his social commitment and that of his University, he serves the public.

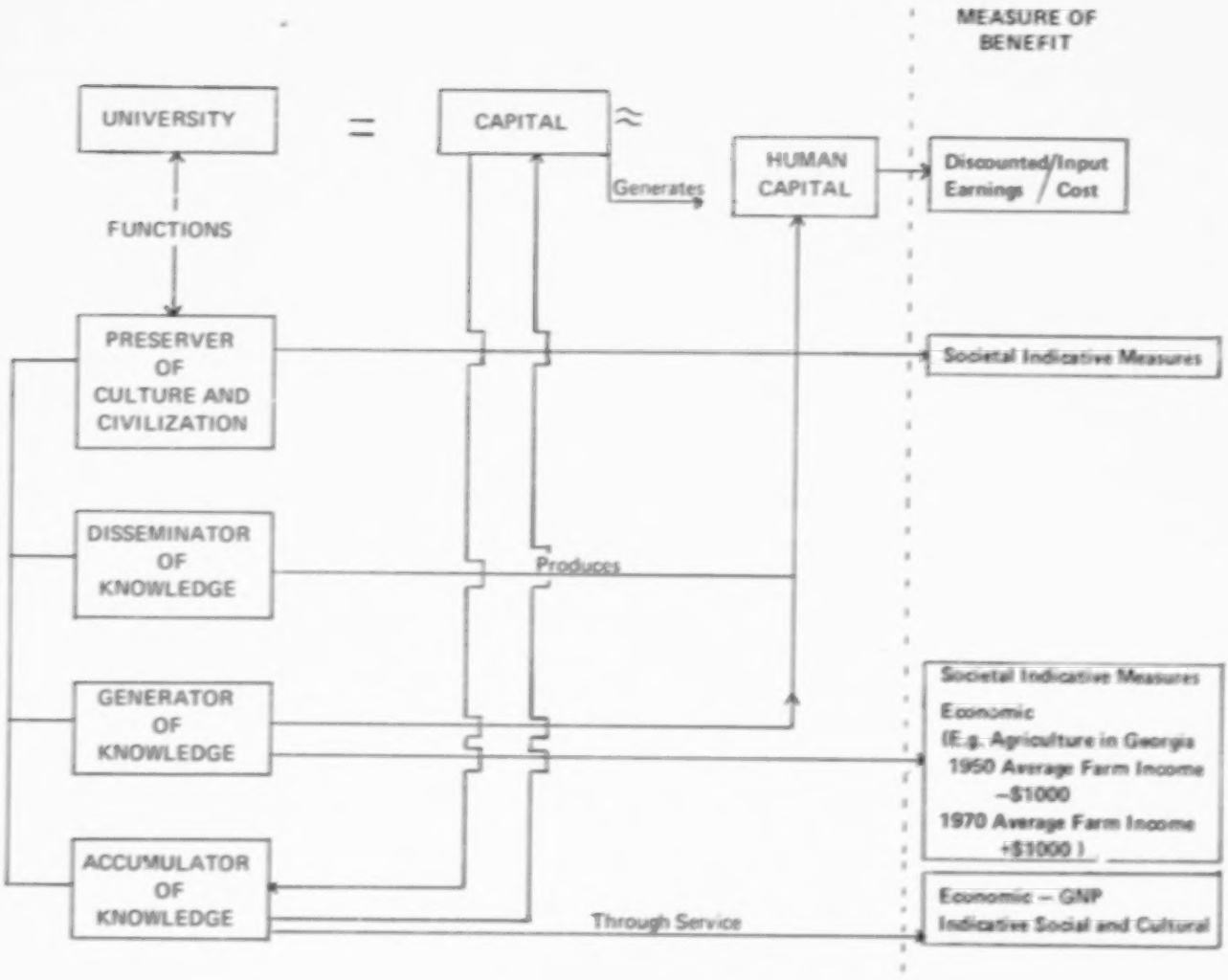
One method of *directing* a function is *to program it*. "Programming", therefore, by necessity is vested in those entitled to determine the outputs of an organization and to allocate the necessary resources.

When speaking of a "program" we cannot be satisfied to use general terminology, but must define in the narrowest sense the objectives and outputs for which each program is designed. Through "instruction" as an activity and as a function we might produce the educated man as the final output. We may find that other activities such as research will also contribute to that final output. However, as soon as we attempt to narrow the output and interconnect the elements which produce such outputs within a given structure, we have difficulties untangling the webb we might have created. We were confronted with this particular dilemma when attempting to link up the PCS structure with obvious University outputs.

We did not question that what is shown by NCHEMS as "Primary Programs" will lead to a final output of the University, i.e., the "educated man". The difficulties were encountered when we narrowed the outputs to degrees and still more when we narrowed them to specific categories of degree-majors, which we recognize as "program-packages". We do not question that the activities indicated in the "Support Programs" also contribute to final and specific outputs.

The NCHEMS Program Classification Structure nomenclature is helpful in perceiving the deep understanding the WICHE group had when presenting their structure to bring elements into sectors, categories and what they perceived to be the programs. As we recognize those

FUNCTIONAL OVERVIEW OF THE UNIVERSITY



"programs" to be more in the nature of "functions", we could also not help but perceive them as "activities" and the classification structure becoming a nomenclature, the center of which we certainly recognized as the *PROGRAM ELEMENT*. As we will later illustrate that same Program Element (Course) is our basic input into Programs as we see them.

Our interpretation of the NCHEMS Program Classification nomenclature, reproduced on the next page, takes this form:

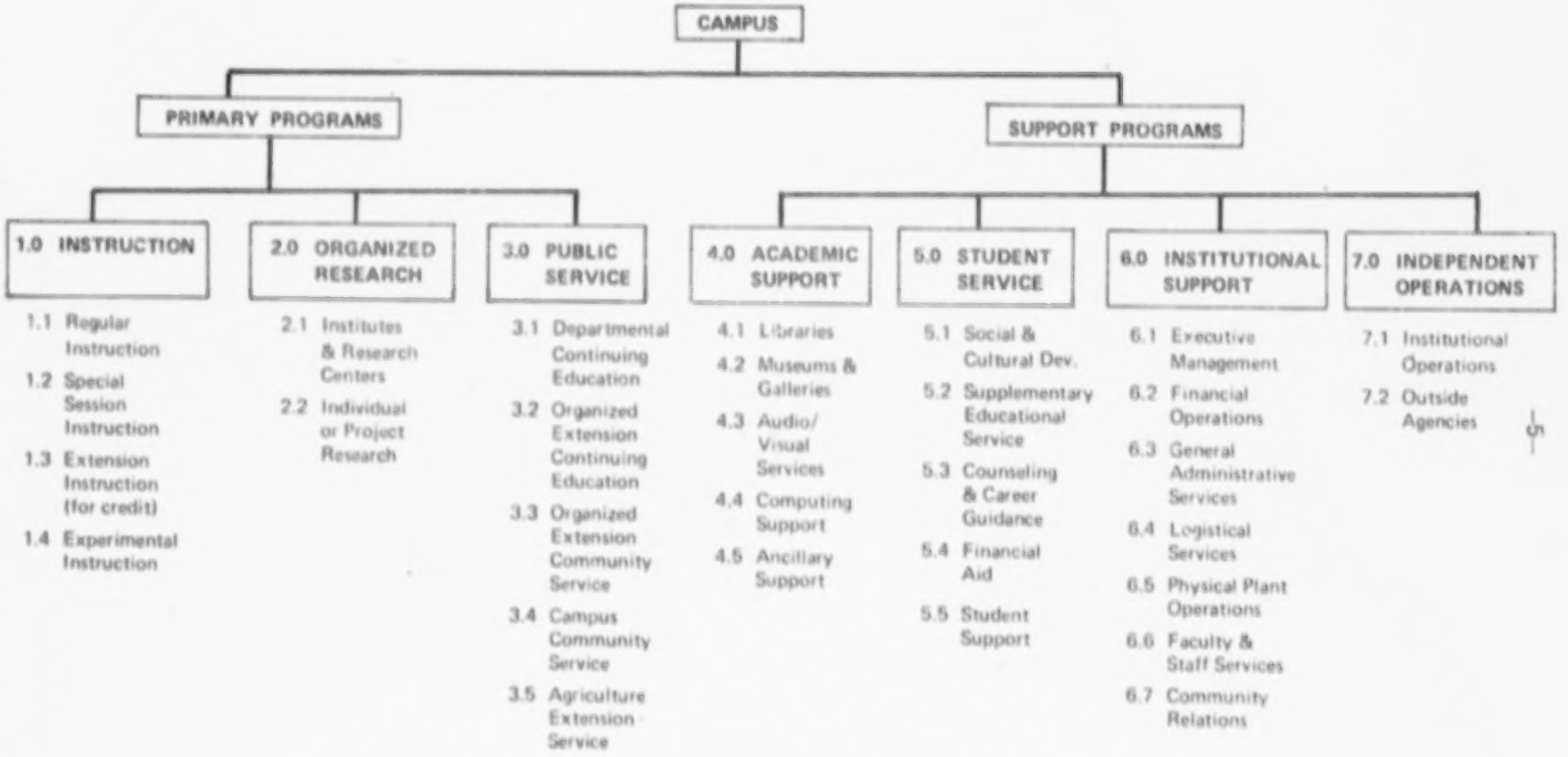
PROGRAM ELEMENT		– Physics 100A
ACTIVITY LEVEL	PERFORMED ON	– Lower Level
REPRESENTS	HEGIS DISCIPLINE CLASS	– Physical Science
– Sub Class	– Sub Class	– Physics
PROVIDED THROUGH		– Instruction
– Sub Class		– Regular Instruction

In other environments, such as governments, difficulties have arisen when attempts were made to crossover from organizational units to what we will later state to be programs. Such difficulties may have dissuaded many from pondering whether or not the organization of a University by itself is not an indicator of the organizational outputs thus presenting itself as a natural "Program Structure".

We will recognize that within a university as in other organizations, "Programming"rests with its governing body, the Board of Regents, the Board of Trustees or others who have the powers to make decisions. Most of our universities have a long tradition and programs have been derived from the inherent functions with which the university is endowed. It should not, therefore, be surprising that the organizational structure of a university is much more related to programs than we might find in other environments.

We have pondered long and hard about the relationship of outputs to the various activities within the *process*. Organizationally a university is made of a number of schools divided into specific departments and institutes. In each department and school, we find instructional activities concentrated in courses, laboratories, seminars, etc. Research activities mostly interact with instruction activities, but in addition are often directed as individual or group projects and have outputs of their own. The same can be said of service activities.

WICHE PROGRAM STRUCTURE



Activities within organizational units are managed by a hierarchy which households input resources, does the operational planning, and makes logistic decisions. They are deeply involved in all the processes and are, as individual units or groups of units, contributing to program outputs.

To discern and identify programs within the organizational structure, a study of objectives and the interplay of functions is a basic prerequisite. Those responsible for creating new programs or determining the continuation of existing programs have the same responsibility.

Upon analysis of the eleven major objectives isolated in a recent self-study by the University of Georgia, it became obvious that the production of the educated man permeated all of the objectives. Involved in that production are implicit and explicit benefits which the recipients of education receive.

Since the basic process of producing the educated man rests within the varying activities of knowledge, dissemination and research interaction and is concentrated upon the student, we isolated as a major grouping.

THE STUDENT–RELATED PROGRAMS

Research and service need not by necessity be concentrated upon the student. As we illustrated the functions and identified the University objectives we found that the University to a great extent serves its environment; thus we isolated a second grouping:

THE ENVIRONMENTALLY RELATED PROGRAMS

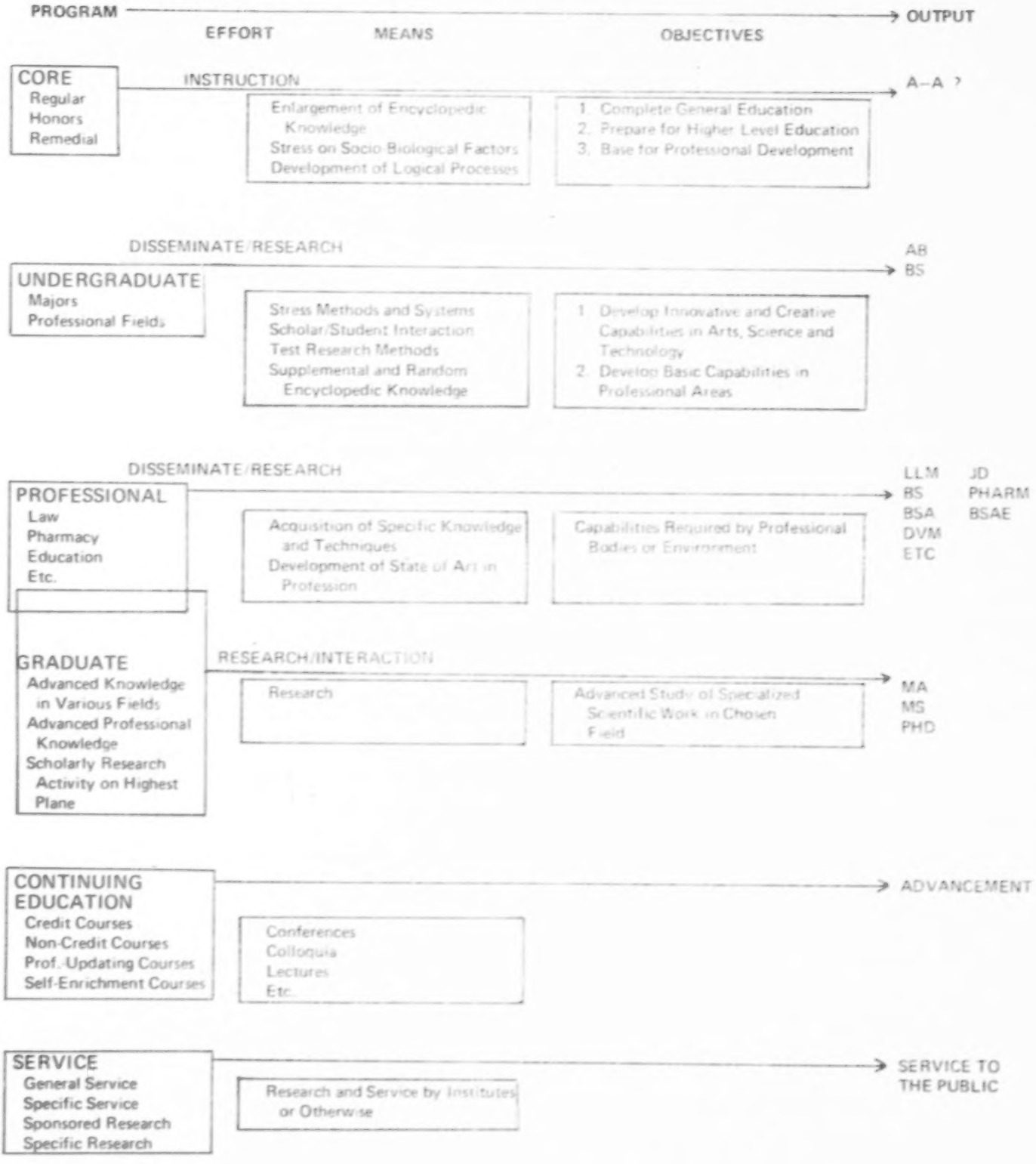
By suboptimizing these two major groups and identifying specific outputs we were able to present one concept of a program structure differing from, but not incompatible with that of NCHEMS.

One often relegates in conceptualization important facets within processes which are supporting a structure. NCHEMS certainly has not made that mistake and has presented in their structure all supporting elements.

THE SUPPORT PROGRAMS

In our model of a program structure, important institutional input support was ignored. Due to the infant state of the art in Institutional Research, the outputs of these support inputs need much more study. It is by no means asserted that whatever program structure is developed approaches perfection but must constantly be refined and updated.

ONE CONCEPT OF A MULTIVERSITY PROGRAM STRUCTURE



UNIVERSITY OF GEORGIA
FORD FOUNDATION PPBS

The WICHE structure of support programs depicts:

Academic Support
Student Support
Institutional Support
Independent Support

The following comments will be made:

Academic Support

Libraries

The most extensive operations within the academic support group are the Libraries--consisting of all activities which directly support the operation of a catalogued or otherwise classified collection of published material. Many issues involving the libraries are at present unresolved. The computer has definitely made an impact and questions such as replacement of books by different arrays of cybernetic devices should be asked. Research on operational characteristics of libraries is still inadequate. With limited information available about measurements of library performance and with little experimentation dealing with value structure upon which to compare alternatives, the library's location in a Program Structure can only be described in vague terms.

Several characteristics of libraries stand out that tend to highlight the difficulties of placement within the program structure:

Libraries sometimes exist apart from universities.

The closer a library is to users of that library the more useful it will be.

As more material is collected in a library, the more convenient it will be for the user.

The velocity of circulation of specific material contained in a library range from zero to a very high indicator.

There is very little direct relationship between the use of the library and specific disciplines, e.g., the law library, the science library, etc.

The library contains a depository of cultural values.

The library is a research resource.

The library is the basic resource for students and teachers alike!

From this partial list of library characteristics, two library functions stand out:

(a) the storage function, and

(b) the retrieval function.

Since the capital outlay for the library and its storage function is basically a cultural one, it can be assumed as a subfunction of a specific environmentally related culture program. The retrieval function is important in both the teaching and research programs and might have an impact on service programs. The development of procedures for the division of cost might be necessary.

Museum and Galleries

Any activities surrounding the operations of museums and galleries would also be considered a culture subprogram.

We often mistake the relationship of an activity to a program. Some of the following comments reflect out thinking in this regard.

Audio-Visual Services

These services encompass investments and activities of a purely organizational nature more appropriately related to costing procedures. Thus, it is ignored in this consideration of program structures.

Computing Support

The arguments above also hold for computing support.

Ancillary Support

In the WICHE Program Classification Structure, ancillary support such as teaching hospitals and demonstration schools are mentioned. Such activities in our model are program elements (in this case ancillary to the medical courses or courses in teacher education) and are not acceptable either as programs or subprograms.

Student Service Programs

Social and Cultural Development

As such activities are basically supported by the student body financed from a special fee paid by the student, it could be argued that such activities are outside the realm of university programs. Such activities include student associations, student newspapers, dances, cultural events, student clubs, fraternities, special interest groups, swimming pools, golf courses, bowling alleys, etc. Inter-collegiate sports also could be classified in this category. While university involvement in these activities is at best tangent, the

outputs of such categories indicate cultural involvement. These activities, therefore, are compatible with a cultural program which can be isolated.

Supplementary Educational Service

WICHE'S structure designated this category as remedial actions taken by universities. In our model this service clearly would be a subprogram in the lower-level or Core Program.

Counseling and Career Guidance, Financial Aid and Student Support

These activities are cost centers rather than programs. Basically these activities are cost-elements chargeable to programs, but only after sufficient studies are available can cost allocations to the proper programs be made.

Institutional Support

WICHE has listed the following activities under this grouping:

Executive Management
Fiscal Operations
General Administrative Services
Logistical Services
Physical Plant Operations
Faculty and Staff Services
Community Relations

As we delved deeper into a university's structure, objectives, outputs and programs, one conclusion overshadows all others: that it is dangerous to compare an institution with a private enterprise productive unit. This conclusion, affecting both program structure and costing methodology, persuaded us that a third group of programs were necessary:

THE INWARDLY DIRECTED PROGRAMS

Executive management, fiscal operation, general administrative services, logistic services, and faculty and staff services obviously are part of a program of administrative services, the goal of which is to preserve the mere existence of the university. Activities concerning the physical plant are related to certain types of costs. Activities related to community relations can be classified only after individual activities are isolated.

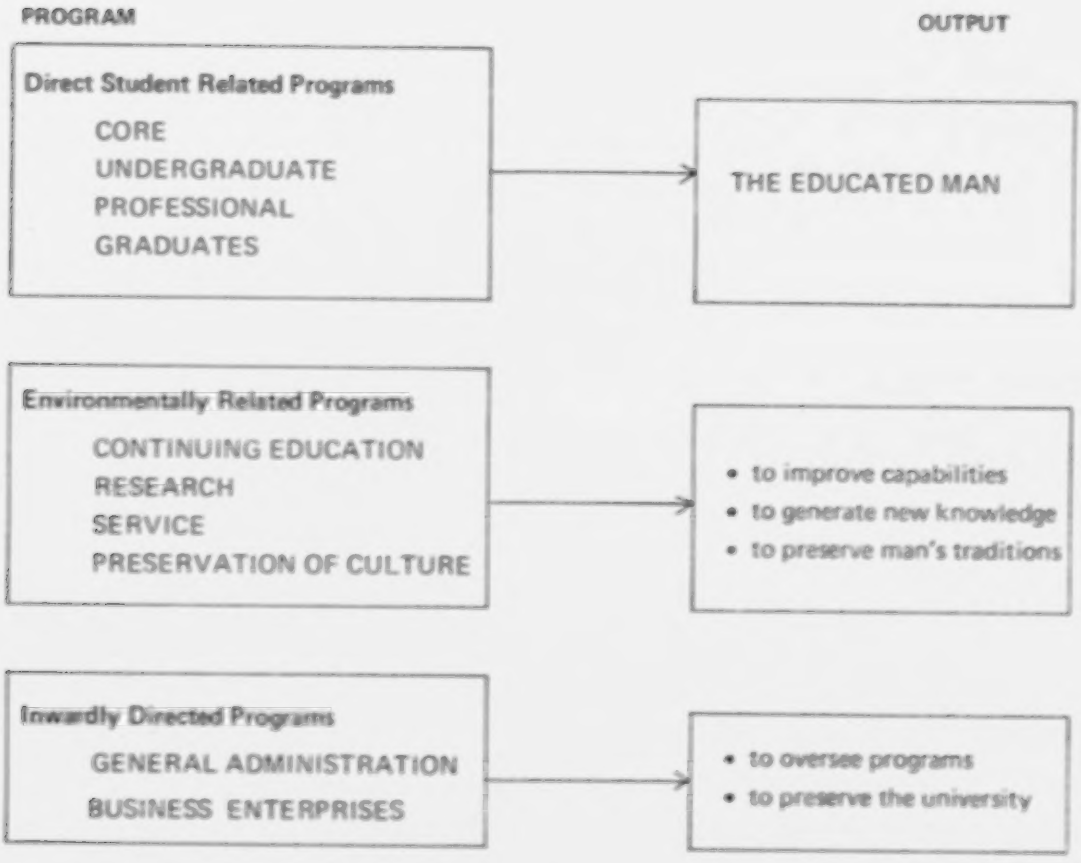
It appears that two important university activities, admissions and registration, have not been highlighted in the WICHE structure. We intend to treat these activities as cost-centers.

Independent Operation

Since university outputs do not depend on any independent operation they could be ignored in this discussion.

Our new oversimplified PCS can now be shown as follows:

CATEGORIES OF PROGRAMS



As we progressed with the development of the basic program structure, some sub-programs became readily apparent. Others are being structured in consultation with the responsible deans and department heads. We are firmly convinced that when dealing with student-based university outputs the activities surrounding diversely arranged courses of instruction are the basic program elements.

Elements which form the basis for research and service programs are found in the individual research and service projects. As we see it now, the latter element can presently only be structured in a more or less crude form and its substantial refinement may proceed slowly.

Our structure has in common with NCHEMS that the instructional course, the research project and the service project *are the Program Elements or the lowest component measure* as shown in the next schematic. There is also the bridge through methods of quantification and costing to cross over from the organizational unit to the programs. Within the INPUT–PROCESS–OUTPUT PARADIGM of the university we isolated the five important cross-overs from:

(1) Funds available – to
(2) Things we must buy (line items)
(3) Functions we are serving
(4) Activities we are involved with, and
(5) Program outputs we are producing.

These crossovers must be attained on every level (vertical) and institutional entity (horizontal) of the university. As we had to convince ourselves that our Program Classification structure is workable we have concentrated on a Program Budget and Accounting document where such crossovers are amply quantified. The schematic on page 14 illustrates the micro-universe of the university; a micro-universe because it is applied to a department, the lowest level in the university hierarchy. It also demonstrates the five important crossovers.

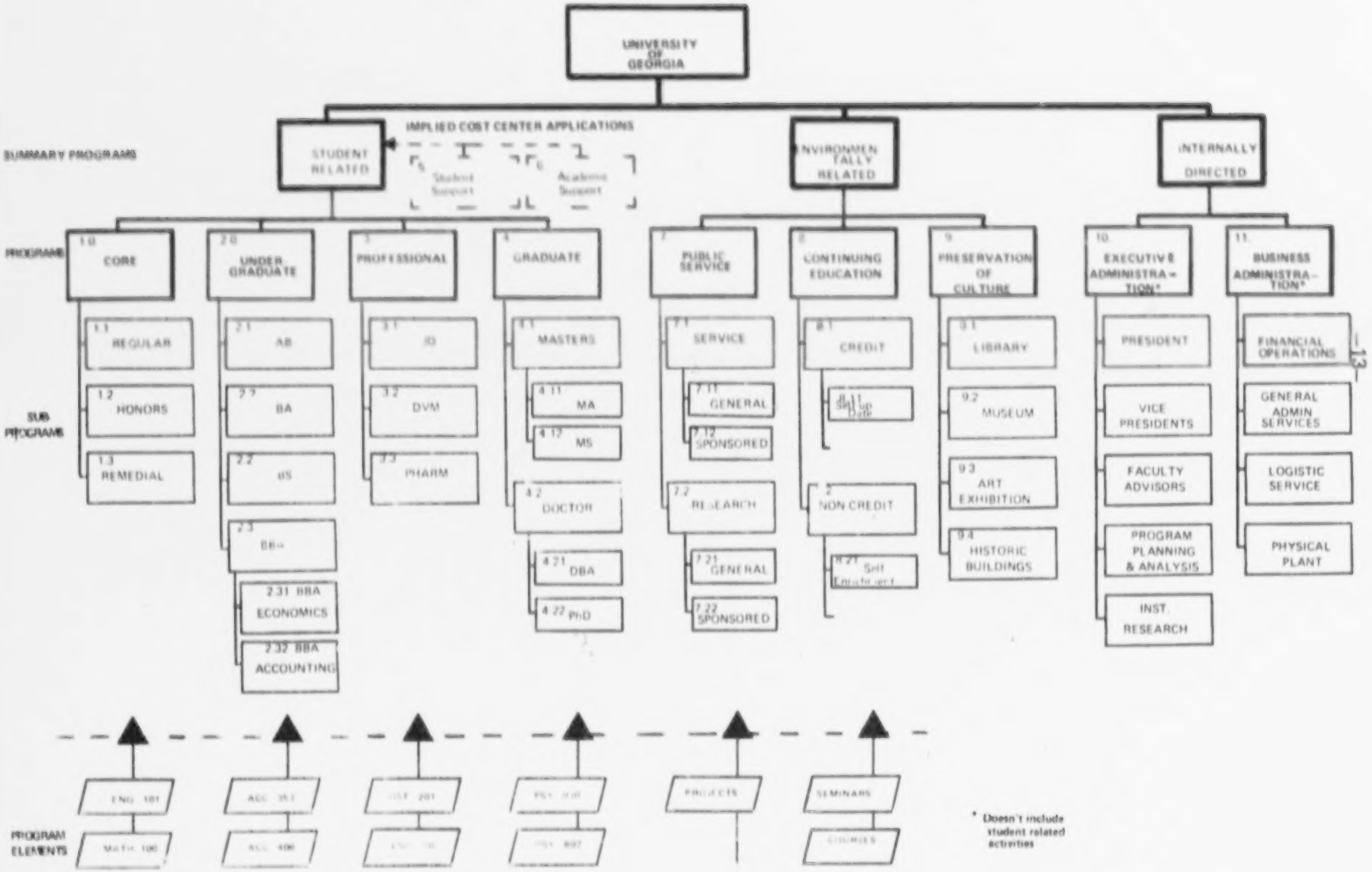
SUMMARY

We consider NCHEMS PCS as a taxonomy of *activities* within the processes of higher education. That taxonomy is of prime importance since it classifies the major activities and brings them down to Program Elements–i.e., from "Instruction" to "Courses"; from "Research" and "Service" to "Projects". To bring this taxonomy together within our concept we could best illustrate it as follows:

WICHE

Major Activity		– Instruction
Sub Activity		– Regular
Activity concerned with discipline		– Physical Sciences
Subclassification		– Physics
Place of Activity		– Lower Division
Specific Activity	– PROGRAM ELEMENT–	– Course Physics 100A
GEORGIA CONCEPT:	INPUT INTO:	
Program Category or Package	↓	– BS Major Physics
Program		– BS Degree
Program	or	– Any other degree where required or elective
	↓	
Sub-Program		– Core-Hard Sciences
Summary Program	or	– Student Related

USA PROGRAM STRUCTURE



UNIVERSITY OF GEORGIA

BUDGET AND ACCOUNTING DOCUMENT

Fiscal Year 197 2

SCHOOL: **DEPARTMENT OR INSTITUTE:**

(1) FUNDS GENERATED	$ PREVIOUS	$ CURRENT	$ PROPOSED
Ga. Appropr. (Formula Net)	268,411		
Stud. Fees & Other Income	72,058		
TOTAL FORMULA	340,469		
Federal Grants	20,000		
Other Grants	33,000		
TOTAL	393,469		
FUNDS REC'D or EXPECTED	390,000		

EFT	(2) LINE ITEMS	$ PREVIOUS	$ CURRENT	$ PROPOSED
1.0	Department Head	25,000		
1.5	Full Professor	35,000		
3.0	Associate Professor	60,000		
6.0	Assistant Professor	108,000		
3.0	Instructors	27,000		
6.0	Graduate Assistants	55,000		
	Others			
20.5	Total Academic & Instructor	310,000		
.5	Counselor	8,000		
4.0	Clerical	22,000		
25.0	TOTAL PERSONNEL	340,000		
	Supplies	10,000		
	Travel	30,000		
	Department Equipment	10,000		
	TOTAL ALLOTMENT	390,000		

EFT	(3) FUNCTIONAL DISTR.	$ PREVIOUS	$ CURRENT	$ PROPOSED
1.5	Instruc. Administr	97,000		
15.0	Instruction	222,254		
0.5	Academic Counsl.	8,000		
3.0	General Research	3,500		
2.5	Sponsored Research	33,574		
2.5	Service	25,672		
25.0	TOTAL	390,000		

(4) ACTIVITY DISTRIBUTION (Previous Year)

A. Instruction

LEVEL	No. of COURSES/ SECTIONS	No. STUDENTS	SCH	TCH	DOLLARS
LL	3/32	874	4370	160	46,940
UL	7/38	584	2920	190	85,779
PROF	-	-	-	-	-
GRAD	9/58	430	2038	274	173,381
Totals	19/128	1888	9328	624	306,100

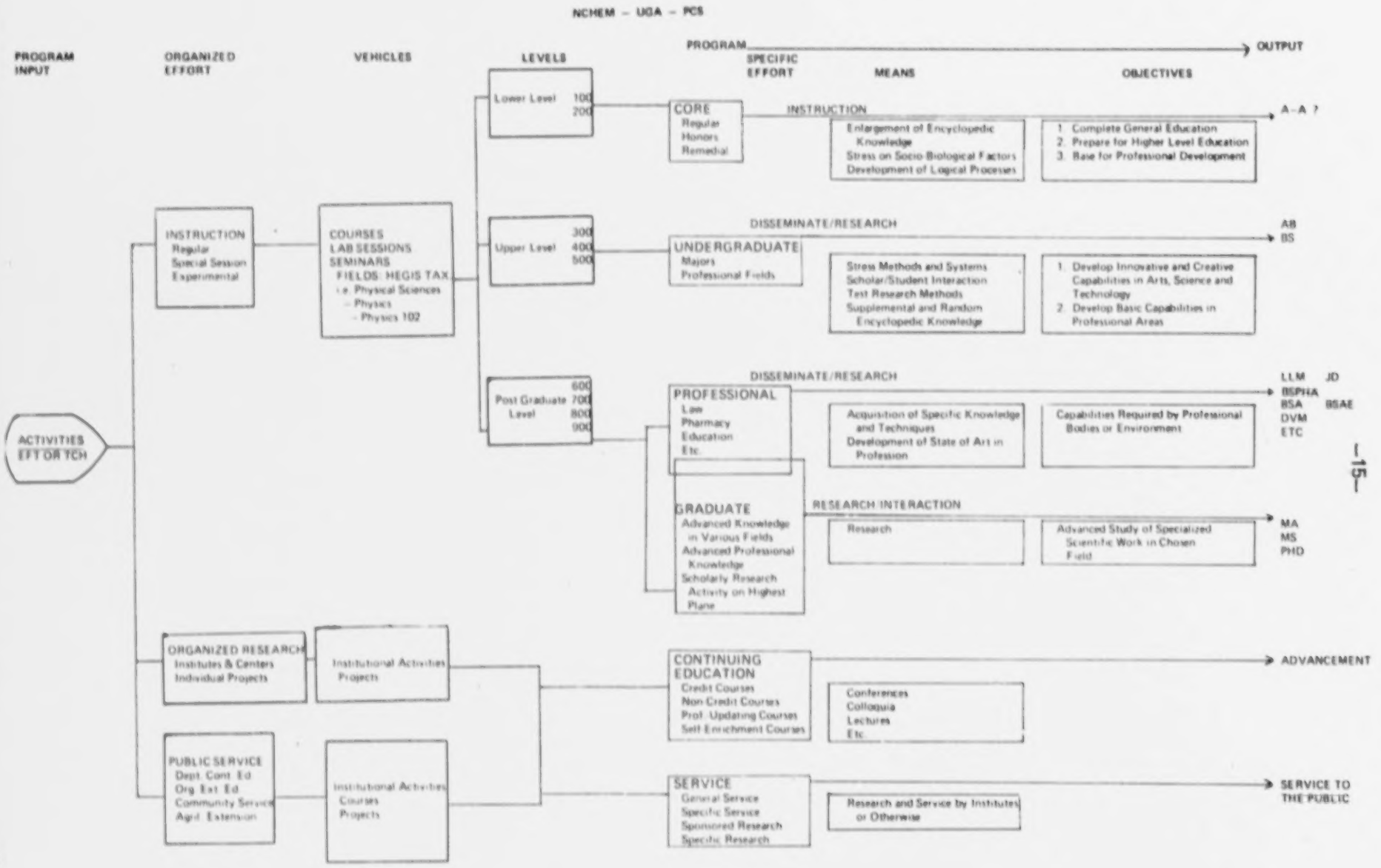
B. General Research Activities	-
C. Sponsored Research Activities	48,300
D. Service Activities	35,600
E. Others	
TOTAL ACTIVITIES	390,000

(5) PROGRAM CONTRIBUTION (Previous Year)

Level	Program Package	SCH	DOLLARS	$ BY LEVELS
LL	Humanities	3300	35,447	
	Major Dir	1070	11,493	46,940
UL	Major 1	310	9,107	
	Major 2	1130	33,195	
	Major 3	670	19,682	
	Major 4	790	23,207	
	General	20	588	85,779
GR	Master X	912	77,588	
	Master Y	741	63,040	
	Ph.D. X	211	17,951	
	Ph.D. Y	125	10,634	
	Ph.D. Z	49	4,168	173,381
	Instructional Programs	9328		306,100
RESEARCH	Project NY2		22,500	
	Project UGA 506		12,000	
	Project A 141		12,400	
	Project NSF 506		1,400	48,300
SERVICE	Georgia INST		18,500	
	Project S 506		12,400	
	Project S 507		4,700	35,600
	Total Program Contribution			390,000

FORD FOUNDATION

PPBS FORM 5
REV. 3/72


NCHEM – UGA – PCS
PROGRAM INPUT
ORGANIZED EFFORT
VEHICLES
LEVELS
PROGRAM
SPECIFIC EFFORT
MEANS
OBJECTIVES
OUTPUT
ACTIVITIES EFFORTS
INSTRUCTION
Regular
Special Session
Experimental
COURSES
LAB SESSIONS
SEMINARS
FIELDS: HEGIS TAX
i.e. Physical Sciences
– Physics
– Physics 102
Lower Level 100 200
Upper Level 300 400 500
Post Graduate Level 600 700 800 900
CORE
Regular
Honors
Remedial
INSTRUCTION
Enlargement of Encyclopedic Knowledge
Stress on Socio-Biological Factors
Development of Logical Processes
1. Complete General Education
2. Prepare for Higher Level Education
3. Base for Professional Development
A-A ?
UNDERGRADUATE
Majors
Professional Fields
DISSEMINATE/RESEARCH
Stress Methods and Systems
Scholar/Student Interaction
Test Research Methods
Supplemental and Random Encyclopedic Knowledge
1. Develop Innovative and Creative Capabilities in Arts, Science and Technology
2. Develop Basic Capabilities in Professional Areas
AB
BS
PROFESSIONAL
Law
Pharmacy
Education
Etc.
DISSEMINATE/RESEARCH
Acquisition of Specific Knowledge and Techniques
Development of State of Art in Profession
Capabilities Required by Profesional Bodies or Environment
LLM JD
BSPHA
BSA BSAE
DVM
ETC
GRADUATE
Advanced Knowledge in Various Fields
Advanced Professional Knowledge
Scholarly Research Activity on Highest Plane
RESEARCH INTERACTION
Research
Advanced Study of Specialized Scientific Work in Chosen Field
MA
MS
PHD
ORGANIZED RESEARCH
Institutes & Centers
Individual Projects
Institutional Activities
Projects
PUBLIC SERVICE
Dept. Cont. Ed
Org Ext Ed
Community Service
Agric Extension
Institutional Activities
Courses
Projects
CONTINUING EDUCATION
Credit Courses
Non-Credit Courses
Prof. Updating Courses
Self Enrichment Courses
Conferences
Colloquia
Lectures
Etc.
ADVANCEMENT
SERVICE
General Service
Specific Service
Sponsored Research
Specific Research
Research and Service by Institutes or Otherwise
SERVICE TO THE PUBLIC